

## ABSTRACT

The present invention relates to a film-formation method of a diamond electrode used in an electrolytic processing apparatus and other devices for treating water and waste liquid. This method utilizes CVD such as hot filament CVD including supplying a high-concentration carbon source to form a low-quality thick first diamond film (1) on a substrate at a high rate, and then supplying a low-concentration carbon source to form a high-quality thin second diamond film (2) on the first film at a low rate. This structure can prevent oxidation corrosion due to OH radical and can prevent entry of an electrolytic solution into the film, thereby enhancing durability of the diamond film. The thick first diamond film is formed at a high rate, and the second diamond film is made thin at a low rate. Therefore, a total film-formation time can be short, and a low-cost diamond electrode can be made.